BRIAN J. STRETCH (CABN 163973)
United States Attorney

BARBARA J. VALLIERE (DCBN 439353)
Chief, Criminal Division

KEVIN J. BARRY (CABN 229748)
Assistant United States Attorney

450 Golden Gate Avenue, Box 36055
San Francisco, California 94102-3495
Telephone: (415) 436-6840
FAX: (415) 436-7234
Email: kevin.barry@usdoj.gov

Attorneys for United States of America

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN FRANCISCO DIVISION

UNITED STATES OF AMERICA, Plaintiff, v. ADRIAN GORDON, CHARLES HEARD, and ESAU FERDINAND, Defendants.	NO. CR 13-0764 WHO **UNITED STATES' SUPPLEMENTAL BRIEF IN OPPOSITION TO MOTION TO EXCLUDE DNA EVIDENCE** Hearing Date: July 17, 2017 Hearing Time: 3:00 p.m. Hon. William H. Orrick

INTRODUCTION

Defendants Gordon, Heard, and Ferdinand have challenged the DNA testing done on various items of evidence in this case under *Daubert*, claiming that the conclusions drawn from that testing are unreliable because of the quantity of DNA obtained from the samples tested and because of the methodology used by the DNA labs. On May 16-17, 2017, the Court held an evidentiary hearing regarding this issue. The government presented Helen Kim, a criminalist at the Contra Costa County Crime Lab, who tested materials related to Defendant Gordon, and Gary Harmor, the director of SERI, an independent lab that tested the materials related to Defendants Heard and Ferdinand. Defendants presented Marc Taylor, a person who owns an unaccredited lab. As Ms. Kim and Mr. Harmor testified,

the techniques they used in obtaining results and the analyses they applied in reviewing that data are consistent with common and established practices in the forensic DNA community. The methodologies they employed have been approved by accrediting and certification bodies, and they have been vetted through the labs' own validation studies. For these reasons, testimony regarding their DNA testing of the evidence at issue passes muster under *Daubert*, and the Court should permit such testimony at trial.

ARGUMENT

I. The Function of the Court Under *Daubert*

In *Daubert v. Merrill Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), the Supreme Court clarified the "gatekeeping" function of the trial court in assessing whether to permit expert testimony. In the context of scientific experts, the Court held that "the trial judge must ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable." *Id.* at 589. In their challenge to the DNA testimony, Defendants have attacked the reliability prong of this test.

In terms of reliability, the Court observed that the "subject of an expert's testimony must be 'scientific . . . knowledge.' The adjective 'scientific' implies a grounding in the methods and procedures of science." *Id.* at 589-90 (quoting Fed. Rule Evid. 702). "But, in order to qualify as 'scientific knowledge,' an inference or assertion must be derived by the scientific method. Proposed testimony must be supported by appropriate validation—i.e., 'good grounds,' based on what is known." *Id.* at 590. Courts must make "a preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid." *Id.* 592-93. A key way of assessing the validity of a methodology is considering whether it has been subject to peer review. "But submission to the scrutiny of the scientific community is a component of 'good science,' in part because it increases the likelihood that substantive flaws in methodology will be detected." *Id.* at 593. "General acceptance" of that methodology in the scientific community also has a bearing on whether the methodology is reliable. *Id.* at 594.

On remand in *Daubert*, the Ninth Circuit considered the task of assessing scientific expert testimony to be a "difficult" one. *Daubert v. Merrell Dow Pharmaceuticals, Inc. ("Daubert II")*, 43 F.3d 1311, 1315 (9th Cir. 1995). "The first prong of *Daubert* [reliability] puts federal judges in an uncomfortable position." *Id.* at 1316. "Our task, then, is to analyze not what the experts say, but what basis they have for saying it. Which raises the question: How do we figure out whether scientists have

derived their findings through the scientific method or whether their testimony is based on scientifically valid principles?" *Id.* As discussed below, a simple answer to this question is to allow evidence that has been developed by experts at accredited laboratories who conducted testing in accordance with validated, commonly accepted protocols.

In assessing the reliability of scientific evidence under *Daubert*, trial courts must be careful not to overstep their bounds. "*Daubert* makes the district court a gatekeeper, not a fact finder. When credible, qualified experts disagree, a criminal defendant is entitled to have the jury, not the judge, decide whether the government has proved its case." *United States v. Sandoval-Mendoza*, 472 F.3d 645, 654 (9th Cir. 2006) (reversing district court's denial of expert testimony about defendant's subnormal intelligence). *Daubert* itself indicated that courts should permit the jury and the adversary system to perform their functions, even where expert evidence may be "shaky." "Vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence." *Daubert*, 509 U.S. at 596. This principle was upheld by the Ninth Circuit earlier this month. "Where, as here, the experts' opinions are not the 'junk science' Rule 702 was meant to exclude, the interests of justice favor leaving difficult issues in the hands of the jury and relying on the safeguards of the adversary system—"[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof"—to 'attack[ ] shaky but admissible evidence.'" *Wendell v. GlaxoSmithKline LLC*, — F.3d —, 2017 WL 2381122, at *8 (9th Cir. June 2, 2017). *See also Primiano v. Cook*, 598 F.3d 558, 567 (9th Cir. 2010) ("The district court's other concerns . . . both might be useful to the jury as impeachment, but neither furnished an adequate basis for excluding his opinion.") (reversing exclusion of expert medical opinion). "Basically, the judge is supposed to screen the jury from unreliable nonsense opinions, but not exclude opinions merely because they are impeachable. The district court is not tasked with deciding whether the expert is right or wrong, just whether his testimony has substance such that it would be helpful to a jury." *Alaska Rent-A-Car, Inc. v. Avis Budget Group, Inc.*, 738 F.3d 960, 969-70 (9th Cir. 2013)

Thus, even if expert opinion testimony may be "shaky," it is still admissible if it is based on sound, accepted scientific methodology, and is not a "nonsense opinion." "An example of 'junk science' that should be excluded under *Daubert* as too unreliable would be the testimony of a

phrenologist who would purport to prove a defendant's future dangerousness based on the contours of the defendant's skull." *General Elec. Co. v. Joiner*, 522 U.S. 136, 153, n.6 (1997). Other examples include testimony from someone who claimed expertise in "graphoanalysis," the analysis of personality through examination of handwriting, and "graphotherapy," the alteration of personality by handwriting modification. *See United States v. Bourgeois*, 950 F.2d 980, 987 (5th Cir. 1992).

Here, as the testimony during the evidentiary hearing showed, the proposed expert testimony is based on solid science, using methodologies that are not just accepted in the forensic scientific community, but which have been affirmed through accreditation. Defendants' challenges to the testimony really go to the conclusions drawn from using those methods, which is something reserved for the jury.

II. The Experts' Methodology in this Case Was Approved By Accreditation

As *Daubert* and *Daubert II* instruct, the trial court's gatekeeping function is met when expert testimony is based on the scientific method and has been subject to review by the scientific community. In this case, the methods used by both the Contra Costa Crime Lab and SERI meet that standard because they have been developed using the protocols and requirements of several bodies: the key accrediting agency, ASCLAD; the Quality Assurance Standards (QAS) set by the FBI; and the requirements to upload data into the Combined DNA Index System, or CODIS, a national DNA database maintained by the FBI.

A. The Contra Costa Crime Lab Was Accredited

The Contra Costa Crime Lab is accredited by ASCLD/Lab International, which means that the lab follows rigorous standards to ensure the quality of its work. Dkt. 1185 at 22-23[1] (Reporter's Transcript of May 16, 2017 Evidentiary Hearing) (Helen Kim Direct Examination). Those standards include the examination of the techniques the lab uses to analyze DNA, such as the lab's internal validation studies. *Id. See Daubert*, 500 U.S. at 590 ("Proposed testimony must be supported by appropriate validation—i.e., 'good grounds,' based on what is known."). The purpose of this to ensure that the lab is following the quality guidelines that the accrediting agency requires. Dkt. 1185 at 22-23.

[1] The pagination for the transcripts is taken from the transcripts themselves, not the pagination provided by the ECF header.

Successful accreditation means that the lab is following standards that are imposed on other labs throughout the country, and adherence to these standards is ensured by regular audits. *Id.* at 23, 24-26.

In addition, the lab conforms to the Quality Assurance Standards published by the FBI regarding DNA testing. *Id.* at 28-29. The QAS standards are linked to the lab's accreditation through ASCLD, as conformity with QAS is a requirement for accreditation. *Id.* QAS requirements are also linked to crime labs' ability to use CODIS. If a lab develops a DNA profile from a sample, it can upload that profile to CODIS to see if a potential match with a suspect exists, but the FBI imposes strict guidelines on the type of profile that can be uploaded to the database. *Id.* The techniques and the analysis the Contra Costa County Lab performed in testing the DNA at issue here met those guidelines. *Id.* at 195-96. As with ASCLD, adherence to the requirements of QAS is ensured through regular audits. *Id.* at 25.

The purpose of accreditation and conformity with QAS is to ensure that the work performed by the lab in testing DNA is reliable. *Id.* at 29 ("Q. And so the QAS and the ASCLD audits and requirements, are they designed to ensure that the lab is conducting tests in a way that are reliable? A. Yes."); *id.* at 35-36 ("Q. And so the accreditation and the QAS audits assess whether you've conducted those validation studies; therefore, your use – your lab's use of that equipment, techniques, and kits is – generates reproducible results? A. Correct.")

If a lab is accredited and following national quality assurance standards, the trial court can be satisfied that the reliability test of *Daubert* is met. In fact, this is a position with which the defense's proffered expert agreed.

> Q. Now, I don't know if you can answer this because you're not accredited and you are not audited by QAS, but if a lab develops protocols, say, using 30 cycles of amplification and then validated them, could ASCLD and QAS determine that that procedure was acceptable?
> A. Certainly.
> Q. And by ASCLD and QAS saying that's a decent procedure, it's in conformity with scientific norms?
> A. If they evaluate it appropriately, so they said that, okay, based on this set of validation studies that you've done, then the interpretation guidelines that you've developed matching the characteristics of that particular program, yes, you can get a valid procedure out of it.

Dkt. 1186 at 383-84 (Reporter's Transcript of May 17, 2017 Evidentiary Hearing) (Marc Taylor Cross Examination).

B. SERI is Accredited

As Gary Harmor, the director of SERI testified, his lab is accredited by ASCLD and follows the Quality Assurance Standards for DNA testing. Dkt. 1186 at 215-17 (Gary Harmor Direct Examination). Mr. Harmor provided greater detail about the QAS requirements, explaining that they govern everything from qualifications for various lab employees to the chemicals and equipment used for testing. *Id.* QAS audits also cover the techniques used in analyzing DNA, as well as approval of the validations studies that labs must perform to ensure that they are using the chemicals and equipment properly. *Id.* SERI has passed all those audits. *Id.* at 218. Although as a private lab, SERI does not have direct access to CODIS, SERI nevertheless conforms to the requirements for developing a DNA profile that can be uploaded to the database for comparison. *Id.* at 219-220.

C. The Contra Costa Crime Lab's Use of the "Super Juice" and 10 Second Injection Techniques Was Reliable

Ms. Kim testified that she performed what she referred to as two "enhanced detection" techniques in processing the materials for comparison. The first was what she referred to as the "Super Juice" method. Dkt. 1185 at 88 (Kim Direct Examination). This involved adding one component to the amplification kit—a mix of chemicals designed to make copies of DNA at the locations to be analyzed and compared—and adding a bit more of a reagent already present in the kit. *Id.* at 88-89. This technique was developed by the California Department of Justice, and the Contra Costa Crime Lab affirmed the technique using their own validation studies with the equipment and kits that they used in performing tests. *Id.* at 90 ("Q. And so was – the lab's adoption of the super juice technique from the Cal DOJ Crime Lab followed by performing its own validation studies on this technique, was that consistent with what QAS, SWGDAM, and ASCLD require? A. Yes. Q. The use of super juice post-validation, is that in any way new, novel, or untested? A. No.").

In fact, this technique has since been adopted into the next generation of the very kits used by crime labs throughout the country. The use of this technique was studied by the manufacturer of the kit, was the subject of peer review in a scientific journal, and has since become part of the standard method of performing DNA amplification with that kit. *Id.* at 91-93. This supported the internal validation studies on the use of this technique that the lab performed itself. *Id.* at 93-94.

The second enhanced detection technique that Ms. Kim described using on the samples to be analyzed was a ten-second injection into the electrophoresis machine, in addition to a five-second injection. This is designed to increase the exposure of photoluminescent genetic material to a laser, thus strengthening any potential results. *Id.* at 94-95. As with the other methods used by the lab, the Contra Costa Crime Lab conducted verification studies for the use of this technique, and the lab determined that it produced reliable results. *Id.* at 96-97. Further, this is a technique discussed by the SWGDAM[2] guidelines as an enhanced detection technique with less potential for error than others. *Id.* at 96. Again, the lab's process of using validation studies has been approved by the accrediting agency and QAS. *Id.* at 29, 35-36.

D. SERI's Use of 29 Amplification Cycles, the 10 Second Injection Technique, and the Combined Probability Index (CPI) Was Reliable

Mr. Harmor testified that when he amplified the genetic material in this case, he used 29 amplification cycles to produce sufficient copies of the DNA for analysis. As he testified, this methodology is completely consistent with the protocols associated with the amplification kit he used. "So we validated the Identifiler Plus kit, and the manufacturer said, *You can either do 28 or 29 cycles. That's your choice.*" Dkt. 1186 at 223 (Harmor Direct Examination). In fact, the manufacturer even recommended performing 29 cycles in circumstances where a smaller amount of genetic material was present. "And they recommended 29 cycles for low levels of DNA, so we validated both 28 and 29 cycles." Thus, not only did SERI follow the manufacturer's recommendation when applying 29 amplification cycles in the testing; they also internally validated this methodology, as ASCLAD and QAS both require. *See id.* "Q. And did QAS sign off on the validation studies that SERI did for the Identifiler Plus? A. Yes." *Id.* at 224. This followed the manufacturer's own validation studies, which ensured that using 29 cycles produced reliable results. *Id.* at 226.

In the same way, SERI's use of a 10 second period of injection was the result of validation studies to ensure that this technique generated reliable results.

> Q. So SERI's internal validation testing indicates that 10-second injection results in accurate reproducible results?
> A. Yes.

[2] SWGDAM is a scientific working group for DNA analysis methods. *Id.* at 30.

Q. Does QAS authorize, for lack of a better word, use of 10-second injection time?
A. They don't go in to that kind of specificity. They rely upon the validation study and the results that the laboratory gets to decide whether or not it's acceptable.
Q. And has QAS decided that SERI's use of 10-second injection is acceptable?
A. Yes.

Id. at 228-29. Mr. Harmor testified that the use of 29 amplification cycles in combination with 10 second injection was consistent with QAS guidelines.

Q. Has QAS decided that SERI's use of the 29 amplification cycles in conformity with the kit is acceptable?
A. Yes.
Q. And what about the combination?
A. Yes. It goes – of course, you can use 29 cycles in 5 seconds, 29 cycles at 10 seconds, 28 cycles at 5 seconds, and so forth. It's the combination of what the analyst needs to do to get the best information.

Id. at 229.

Defendants' final attack on SERI's methodology in DNA testing is the fact that the lab used the Combined Probability Index (CPI) in calculating a number to assess the likelihood that a random person could be a contributor to the mixture of DNA found on the tested object in the same way as the person being compared to that mixture. *See id.* at 234-37. As with each of the other methodologies SERI used in this case, and with any methodology an accredited lab uses, SERI's employment of CPI was tested and validated as reliable.

Q. Okay. I'll ask you about that modification in a second, but prior to that – to the change that SERI made in the use of CPI, was SERI's use of CPI consistent with the way the SWGDAM guidelines had been interpreted in the forensic community?
A. Yes.
Q. Had SERI's use of CPI been signed off on as appropriate by QAS?
A. Yes.
Q. Was it consistent with SERI's validation studies?
A. Yes. Yes. Pardon me.
Q. And was it consistent with the requirements of your accreditation?
A. Yes.

Id. at 240. Mr. Harmor also testified that this methodology commonly used in DNA labs throughout the country. In fact, he presented the Court with a 2014 report that indicated that 30% of laboratories were using CPI. *Id.* at 244-45. He further testified that CPI is still being used by DNA labs today. *Id.* at 238.

In fact, the defense's own proffered expert, Marc Taylor, testified that it can be appropriate to use this statistical model. "Q. So is it possible to effectively use the CPI statistical model? A. Under some circumstances, yes." Dkt. 1186 at 377 (Marc Taylor Cross Examination). Referring to the 2014 report discussed above, he agreed that use of CPI was common. *Id.* at 378-79. And he stated that labs today are still testing complex mixtures using CPI. *Id.* at 381. He also admitted that many DNA experts throughout the country are currently presenting opinions based on CPI. "Q. Isn't it true that DNA experts are testifying in courts throughout the country right now about results that they developed through CPI? A. Yes, I believe that's correct." *Id.* at 379. He also admitted that SWGDAM includes CPI as an acceptable statistical model to conduct DNA analysis. *Id.* at 380.

What Mr. Taylor made clear is that Defendants' challenge to SERI's DNA testing and the opinions developed from those tests is not an attack on the methodology itself; it is an attack on how SERI employed those methods.

> Q. So in a lab that is conducting complex analysis of low-level DNA using CPI, your opinion is that they're doing it wrong?
> A. I won't say that absolutely. I said these are complex, and you have to look at the profile itself and what they're doing with it. So it may be that they are doing it wrong, yes.
> Q. And it may be that they're doing it perfectly correctly?
> A. Again, it depends on specifically what they do on the analysis process.
> Q. Yeah. You have to study what they're doing in the particular case. You're not criticizing the technique as a whole; is that right?
> A. That's correct.

Id. at 381. Looking "at the profile itself and what [SERI is] doing with it" is the jury's function; it is not a job for the Court as gatekeeper. "Our task, then, is to analyze not what the experts say, but what basis they have for saying it." *Daubert II*, 43 F.3d at 1316.

III. A Change in the Use of CPI Does Not Render CPI Scientifically Invalid

Mr. Harmor testified that last year, an independent commission suggested that SERI change the way it used the CPI model. Dkt. 1186 at 238-40. He also testified that the forensic community is starting to move away from CPI toward new probabilistic models. *Id.* at 243-44. Prior to last year, there was ambiguity within the SWGDAM guidelines regarding the application of CPI, and, as discussed above, SERI's use of CPI was consistent with its accreditation requirements, with QAS, and with the

manner in which many other labs were using it. *See id.* at 239. Even though SERI has changed its approach, the fact that the scientific community tweaked the application of an accepted methodology does not render the prior use of that methodology unreliable. Indeed, the Ninth Circuit made precisely this point in the context of DNA analysis in *City of Pomona v. SQM North America Corp.*, 750 F.3d 1036 (9th Cir. 2014) (reversing exclusion of expert testimony). "For example, during the 'raging controversy' surrounding the new technique of DNA testing, the Ninth Circuit rejected the argument that 'the FBI's DNA testing and statistical procedures may warrant review and revision' as an adequate reason to exclude expert testimony." *Id.* at 1044-45 (quoting *United States v. Chischilly*, 30 F.3d 1144, 1152–53 (9th Cir. 1994)[3]). The court explained the rationale for this rule: "scientific methods that are subject to 'further testing and refinement' may be generally accepted and sufficiently reliable. There are 'no certainties in science.'" *Id.* at 1044 (citing *Daubert*, 500 U.S. at 590). "The existence of ongoing research, however, does not necessarily invalidate the reliability of expert testimony." *Id.*

Here, the fact that consensus within the scientific community has changed the way a particular methodology is applied—or has moved on to a more refined technique—does not mean that testimony based on that methodology is so unreliable that the trial court should prevent the jury from hearing it. The defense can impeach experts who used methodologies that are no longer state-of-the art with the fact that they are outmoded. However, if the experts' opinions were developed through the scientific method, and particularly if they were based on techniques approved by the scientific community through accreditation and other standards, the jury should be allowed to exercise its role in weighing that evidence.

CONCLUSION

As the evidence at the *Daubert* hearing demonstrated, the opinions by Ms. Kim and Mr. Harmor are well-grounded in "good science." These opinions are based on techniques and methodologies that are generally accepted in the forensic DNA community. They are consistent with the SWGDAM guidelines and the FBI's Quality Assurance Standards. They are the product of internal and external

[3] *Chischilly* was overruled on the issue of police coercion during interrogations by *Doody v. Ryan*, 649 F.3d 986 (9th Cir. 2011) (en banc). *See United States v. Preston*, 751 F.3d 1008, 1019-20 (9th Cir. 2014). *Doody* did not address the issue of expert testimony or *Daubert*.

validation studies and protocols that received the imprimatur of accreditation agencies, and they are consistent with what DNA experts are doing throughout the country. For these reasons, the Court should deny Defendants' motion to exclude. Instead, the Court should exercise its gatekeeping function by permitting the jury to hear this testimony and have it subject to cross-examination and the adversary process.

DATED: June 26, 2017

Respectfully Submitted,
BRIAN J. STRETCH
United States Attorney

_____/s/_____
KEVIN J. BARRY
Assistant United States Attorney